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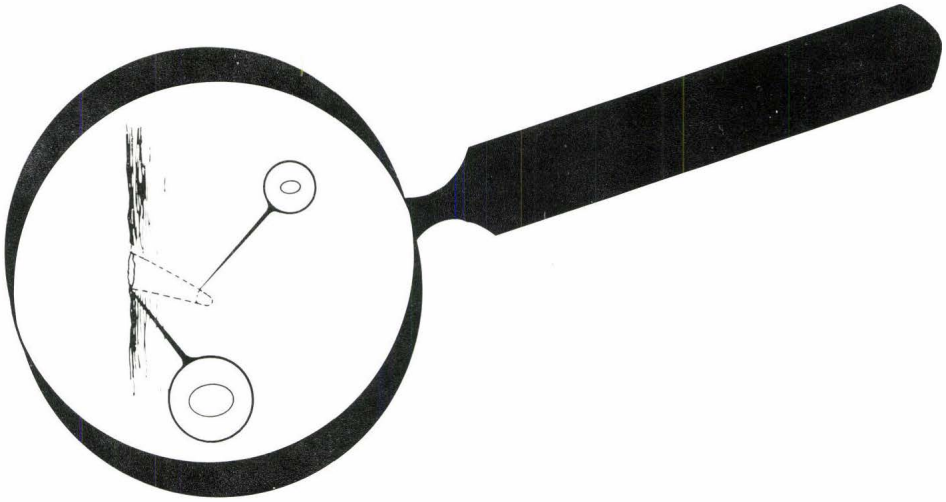
FOREST ENTOMOLOGISTS PLAY SLEUTH, NAIL CULPRITS



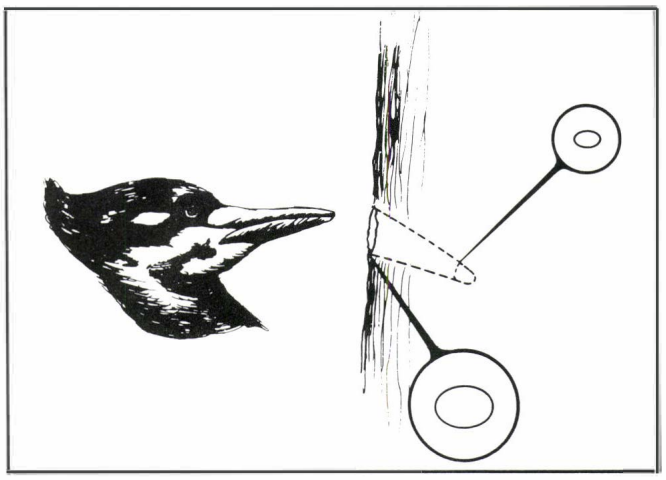
In hearing the story, you'll think it's a classic "who-done-it?". With magnifying glasses in hand, the men set out in search of evidence. For days they probed persistently for even the tiniest clue. And sure enough! They solved the mystery, a costly riddle to the lumber industry. After no simple adventure, the ingenious detectives are now back to their everyday jobs as Forest Service entomologists at the Forest Insect and Disease Laboratory in Delaware, Ohio.

At the Lab, the two scientists, Dr. David Donley and Jim Galford, are engaged in research on control of insects that bore into trees. These insects, more often called borers than boring, dig tunnels into living trees. These tunnels last forever. When tunneled trees are cut down for lumber, their values are severly diminished, because there's simply no market for "wormy" wood.

Additional information may be obtained from:
Information Services Tel -- (Area Code 215) **597-3728**.

NORTHEASTERN FOREST EXPERIMENT STATION UPPER DARBY, PENNSYLVANIA 19082

Dr. David Donley, forest insect and disease researcher, helped solve the mystery of the bore holes.



An artist's illustration of the cone-shaped hole formed by a woodpecker's hard bill. Cross sections show the difference in diameter from end to end.

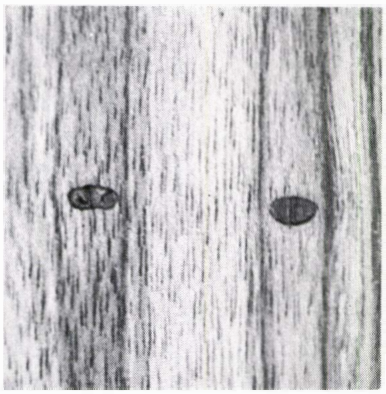
To become thoroughly acquainted with one pesty borer, the scientists spent several years studying its habits. This proved to be a feat of endurance for the men. Borers spend most of their lives out of sight, inside trees. In fact, they can only be studied when they emerge, which is once for a short period (three weeks) every other year. And when they finally exit from their tunnels, they only do so under the cloak of nighttime. Donley and Galford have grown accustomed to using flashlights and to exercising extreme patience in their jobs.

It appears to have paid off. They now know just about everything there is to know about borers. Using the information they have gathered, they are presently testing out possible silvicultural control programs. Their work paid off in another way, too, because through it they learned enough perseverence to be successful sleuths.

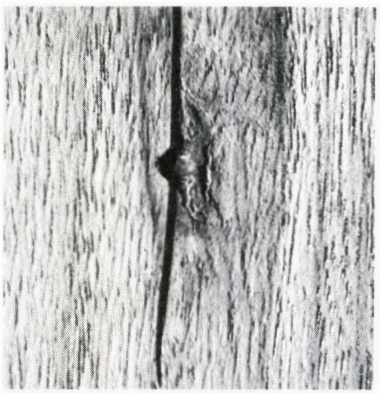
Our sleuth story began in western Kentucky, when several lumbermen — all members of the Walnut Manufacturers' Association — suddenly began noticing little holes in their walnut wood. Now walnut is an expensive wood — one of the most expensive, in fact. The best quality walnut wood is usually processed into veneer, that can be worth as much as $1 per square inch. Veneer is usually made by turning a log and peeling off very thin sheets, in the manner of peeling an apple. As topping for fine furniture, this thin and often highly polished veneer must be in perfect condition. Little holes with stains here and there make a sheet of veneer useless. Because of the holes they were finding, the Kentucky lumbermen were losing a considerable amount of money.

Having found these holes in their walnut wood for the first time ever, the veneer manufacturers immediately suspected they had a borer problem. To the uninitiated, the holes could easily have been made by borers. Of course, the borers weren't in sight (as they very rarely are), but then neither were any other culprits. The lumbermen quickly contacted the experts at the Forest Service laboratory for advice on borer control.

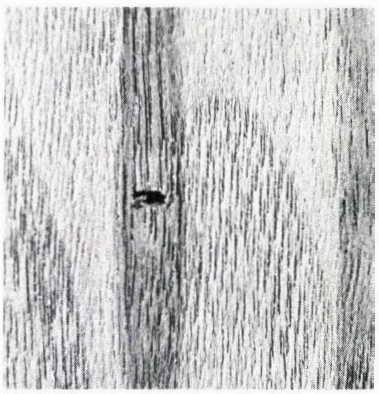
Donley and Galford shook their heads. "Can't be borers!" they exclaimed. Experience taught them that although 30 percent of all red and black oaks are damaged by borers, few walnut trees have ever been subject to attack.



"Peck" filled with over-growth tissue and surrounded by associated stains.



Cracks develop in veneer at the site of the healed peck hole.



Note the rugged margin of a hole left by a woodpecker.

But the lumbermen were not to be put off so easily. "Look!" they said. "We've got evidence." And they sent the scientists a whole crateful of walnut veneer from their mills.

Donley and Galford laid out scores of the 18-inch sheets of veneer that arrived and examined each hole closely. Under magnification their trained eyes could, indeed, see that these were not borer holes — they were not smooth enough. But, if they weren't made by borers, who or what had done it?

Just as their first batch of wood was exhausted without yielding further clues, a new crate of veneer pieces arrived at the Lab. By luck, the Forest Service scientists found in this shipment two thin sheets with matching wood grains. These had been peeled off a log consecutively. Oddly enough, the holes in one sheet were a minute bit larger than those in the matching sheet.

The scientists were elated to find a third sheet and subsequent sheets from the same series. These sheets made it quite evident that the holes in each layer of the wood were of a differnt size. Because borer-produced holes never change so drastically in the space of ¼ to ½ inch, the borer was definitely off the hook. But who or what, remained a question.

Scientists next set the veneer sheets atop each other, as they had originally occurred in the tree. With the sheets in this position, they discovered that the holes formed not a tunnel after all, but a cone. Now, what could produce such cones in wood better than a bird's beak, they reasoned. And what would be more likely than the woodpecker!

Why hadn't the lumbermen thought of the woodpecker? They simply weren't familiar with woodpecker damage. Woodpeckers don't usually attack hardwood trees used for veneer; rather, they are common to hickories, poplar and basswood. Further, the woodpeckers had done a very unusual job on the walnut trees. Instead of pecking an easily-recognized ring of holes around the tree while searching for food, these walnut vandals had pecked and run, leaving behind a number of sporadically-located holes, that it was hard to pin on them.

It took sleuth-power to eliminate the wrong culprits and to recognize the real ones. Now while the lumber industry is looking around for woodpecker control experts, the Forest Service sleuths are proudly resuming their work with real boring insects.

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